ANDREW CHU

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EDUCATION

University of Waterloo   Apr. 2028
Bachelor of Computer Science - Dean's Honours List   *Waterloo, ON*

EXPERIENCE

Software Engineer   May 2025 - Aug. 2025
CGI | LangChain, Docker, PostgreSQL, Python, Java, WebLogic, FastAPI, Ansible, Qdrant   *Markham, ON*
- Developed enterprise RAG chatbot to speed up information retrieval from 500+ internal production guides, reducing team incident response time
- Engineered unified dashboard for remotely executing jobs on **400+** applications and servers, automating health checks, server restarts, and email notification
- Increased chat response accuracy by **38%** through fine-tuning a large language model with QLoRA

Data Engineer Intern   Aug. 2024 - Sep. 2024
Alljoined | Python, NumPy, Pandas   *Toronto, ON*
- Debugged critical timing issue in **EEG data preprocessing** by implementing data logging system in **Python**
- Improved data collection script performance by **20x** by refactoring **WebSocket** script to prevent deadlocking when communicating between EEG headset and computer
- Designed data processing pipeline for denoising and artifact correction using **NumPy**, **Pandas**, and **scikit-learn**

Full-Stack Developer   Sep. 2022 - Jan. 2023
Digitera Interactive | Flutter, Firebase, Dart   *Ottawa, ON*
- Led development of "Skule News" project, a **mobile school news app** to streamline student communication
- Integrated **Firebase** for authentication, real-time updates, and cloud file storage for secure backend support
- Reduced frequency of in-app crashes by **20%** by resolving **6+** bugs resulting from incorrect **Firebase** queries

PROJECTS

UW Data Science Club Website - User Check-In and Application Portal | *Next, Express, MongoDB, Redux, TailwindCSS*
- Developed the University of Waterloo's Data Science Club website as the technical lead for **1000+** registered users
- Resolved **15+** development tickets spanning frontend UI enhancements, application submission workflows, and backend database migration
- Implemented email confirmation for password resets and form submission, improving user experience and security

Tinyraytracer - Computer Graphics Renderer | *C++, Go*
- Developed a fast and simple raytracer written in **Go** and **C++** for **multithreaded** CPU-based 3D rendering
- Accelerated I/O image write operations **8x** by leveraging Goroutines to write **concurrent**, performant code
- Implemented effects including specular lighting, reflection, and refraction using the Phong reflection model

Baseline - EEG Fatigue Tracker (Hack49 Winner) | *Python, FastAPI, SciPy, NumPy, MNE, Matplotlib, React, Jupyter*
- Achieved **2nd Place in "Best in Neurotech"** category at Hack49 out of 42 unique projects
- Implemented fast brain fatigue analysis method, leveraging **MNE, SciPy**, and **NumPy**
- Designed data transformation pipeline converting large misformatted brain data files into processable chunks

Eyedentify - Facial Recognition Attendance Tracker (YRHacks Winner) | *Python, Flask, React, MediaPipe*
- Developed a facial recognition attendance tracker capable of identifying multiple people from a single picture
- Achieved **2nd Place Overall** and **"Best Web App"** at YRHacks 2023 among **350+ participants**
- Implemented a **REST API** using **Flask** to analyze photos sent from a responsive **React** dashboard application

TECHNICAL SKILLS

Languages: TypeScript, Python, C/C++, Java, Go, C#, CSS, HTML, PowerShell, Bash
Databases: MongoDB, MySQL, Firebase, Supabase, PostgreSQL, Qdrant, Cosmos DB
Frameworks: Next.js, React, Express, Flask, FastAPI, Jest, SvelteKit, Electron, n8n, LangChain, nginx
Developer Tools: Azure, WebLogic, Linux, Git, Figma, Docker, Postman, Vercel, Node, Google Cloud Platform